1 WHAT IS CLAIMED IS:

1 1.   A system comprising:

2   a computer; and

3   a storage subsystem,

4   wherein the computer duplicates data and writes

5 them into plural storage areas of the storage subsystem,

6   wherein the storage subsystem transfers content of

7 data update into a first storage area among the plural

8 storage areas, in which the data have been duplicated

9 and written, to a second storage subsystem connected to

10 the storage subsystem before a request of the computer

11 for the data update to the storage area is completed,

12 and

13   wherein the storage subsystem transfers the

14 content of the data update into a second storage area

15 among the plural storage areas, in which the data have

16 been duplicated and written, to a third storage

17 subsystem connected to the storage subsystem after a

18 request of the computer for the data update to the

19 storage area is completed.

1 2.   A system according to claim 1, wherein, in a case

2 where abnormality occurs in a connection between the

3 storage subsystem and the second storage subsystem, the

4   storage subsystem does not receive the request of the

5   computer for update of the data of the first storage area

6   and the second storage area.

1   3.   A system according to claim 2, wherein the storage

2   subsystem receives the data from the second storage

3   subsystem and reconstructs the data stored in the first

4   storage area.

1   4.   A system according to claim 2, wherein the storage

2   subsystem receives the data from the third storage

3   subsystem and reconstructs the data stored in the first

4   storage area.

1   5.   A method of duplicating data in a system including

2   a first site, a second site and a third site, each of

3   the sites including a computer and a storage subsystem,

4   comprising the steps of:

5   duplicating data in the first site to store them

6   in a first and a second storage areas;

7   transferring update data of the first storage area

8   to the second site by a synchronous remote copy; and

9   transferring update data of the second storage

10 area to the third site by an asynchronous remote copy.

1   6.   A method according to claim 5, wherein, in a case

2 where a failure occurs in the first site, the method

3 further comprises the steps of:

4 continuing a processing, which has been performed

5 by the computer included in the first site, by the

6 computer included in the second site; and

7 transferring the update data of a storage area of

8 the storage subsystem included in the second site to the

9 third site.

1 7. A method according to claim 6, wherein, in a case

2 where the first site is recovered, the method further

3 comprises the steps of:

4 continuing the processing, which has been

5 performed by the computer of the second site, by the

6 computer of the first site;

7 transferring the data stored in the storage

8 subsystem of the second site to the storage subsystem

9 included in the first site; and

10 resuming processings of the duplication, the

11 synchronous remote copy and the asynchronous remote copy

12 in the first site.

1 8. A method according to claim 6, wherein. in a case

2 where the first site is recovered, the method further

3 comprises the steps of:

4 continuing the processing, which has been

5   performed by the computer of the second site, by the

6   computer of the first site;

7   transferring the data stored in the storage

8   subsystem of the third site to the storage subsystem

9   included in the first site; and

10   resuming processings of the duplication, the

11   synchronous remote copy and the asynchronous remote copy

12   in the first site.

1   9.   A method according to claim 5, wherein, in a case

2   where a failure occurs in the first site, the method

3   further comprises the steps of:

4   continuing a processing, which has been performed

5   by the computer included in the first site, by the

6   computer included in the third site;

7   transferring the data stored in the storage

8   subsystem included in the second site to the third site

9   and making contents of the data of the storage subsystems

10   included in the second and the third sites coincide with

11   each other; and

12   transferring content of data update into the

13   storage subsystem of the third site to the storage

14   subsystem of the second site.

1   10.   A method according to claim 5, wherein, in a case

2   where a failure occurs in the first site, the method

3   further comprises the steps of:

4   continuing a processing, which has been performed

5   by the computer included in the first site, by the

6   computer included in the third site; and

7   transferring content of data update into the

8   storage subsystem of the third site to the storage

9   subsystem of the second site.

1   11.   A method according to claim 10, wherein, in a case

2   where the first site is recovered, the method further

3   comprises the steps of:

4   continuing   the   processing,   which   has   been

5   performed by the computer of the third site, by the

6   computer of the first site;

7   transferring   the   data   stored   in   the   storage

8   subsystem of the third site to the storage subsystem

9   included in the first site; and

10   resuming   processings   of   the   duplication,   the

11   synchronous remote copy and the asynchronous remote copy

12   in the first site.

1   12.   A method according to claim 10, wherein, in a case

2   where the first site is recovered, the method further

3   comprises the steps of:

4   continuing   the   processing,   which   has   been

5   performed by the computer of the third site, by the

6 computer of the first site;

7   transferring the data stored in the storage

8 subsystem of the second site to the storage subsystem

9 included in the first site; and

10   resuming processings of the duplication, the

11 synchronous remote copy and the asynchronous remote copy

12 in the first site.

1 13.   A computer system comprising:

2   a computer; and

3   a storage subsystem,

4   wherein the computer writes a log of a database

5 into a first storage area of the storage subsystem, and

6 stores data of the database into a second storage area

7 of the storage subsystem,

8   wherein the storage subsystem transfers update

9 data into the first storage area and update data into

10 the second storage area to a second storage subsystem

11 connected to the storage subsystem by a synchronous

12 remote copy, and

13   wherein the computer transfers the log to a second

14 computer connected to the computer.

1 14.   A data duplication method in a system including a

2 first site, a second site and a third site, comprising

3 the steps of:

4   writing a log of a database into a first storage
5 area of a storage subsystem of the first site by a
6 computer included in the first site and storing data of
7 the database into a second storage area of the storage
8 subsystem of the first site;

9   transferring update data into the first storage
10 area and update data into the second storage area to the
11 second site by the storage subsystem using a synchronous
12 remote copy; and

13   transferring the log to the third site by the
14 computer.

1 15. A method according to claim 14, wherein, in a case
2 where a failure occurs in the first site, the log stored
3 in the second site and the log stored in the third site
4 are made to coincide with each other, and a processing,
5 which has been performed by the computer of the first
6 site, is continued by a computer included in the second
7 site.

1 16. A method according to claim 14, wherein in a case
2 where a failure occurs in the first site, the log stored
3 in the second site and the log stored in the third site
4 are made to coincide with each other, and a processing,
5 which has been performed by the computer of the first
6 site, is continued by a computer included in the third

7   site.